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July 17, 2013

Metropolitan Transportation Commission
Public Information Office
101 Eighth Street
Oakland, California 94607

Dear Sir/Madam,

RE: Comments on the responses of ABAG/MTC to my review of
PLAN BAY AREA DRAFT ENVIRONMENTAL IMPACT REPORT—April 2013

PART 1: UrbanSim. Comments C171-1 to C171-7.

Below is my commentary to the ABAG/MTC responses to my concerns relating to the use of UrbanSim for developing the Plan Bay Area EIR (letter dated May 7, 2013.) Most of the responses provided are wordsmithing exercises rather than substantially qualified answers, as explained below.

C171-1. My use of "significantly different" in the same sentence as "statistical tests" clearly indicates that the results need to be accompanied by **statistical significance** tests. None of the results in the EIR come with ranges, standard deviations, variances or confidence intervals. This is intentional in the part of ABAG/MTC because if these were provided, then any person with basic knowledge of statistics would be able to ascertain that all alternatives are statistically similar and there is no basis to favor one over another.

C171-2. ABAG/MTC never responded to my complaint that **the application of UrbanSim in this EIR clearly did not involve a validation and uncertainly analysis effort commensurate to the public policy implications of the model's results.**

Page 3.6-660. ABAG/MTC did not respond to my complaint that **the very basis of the Plan that the development of PDAs and TODs bestowed with good transit generates economic**

development, is barely supportable. A major conclusion of a study by Purdue University[1] for the Indiana DOT states that "Based on a review of the research literature, transportation infrastructure appears to be a necessary, but not sufficient, condition for generating economic development." TODs such as Sunnyvale have been major flops.

Page 3.6-661. ABAG/MTC did not respond to my complaint that **a major assumption in the model does not hold: A general critique of integrated land use and transport simulations is that integration is reduced to the principle that the calculated accessibility or travel time measures serve as one of the explanatory variables of the residential choice module.** However, literature on residential location choice behavior has systematically shown that accessibility plays a **marginal** role in the residential choice decision. Urbansim thrives on skim tables from Model One, but this information has a marginal role in residential choice decision!

The models used in the Plan emphasize two factors that have a marginal effect in where people choose to lives, as a result a large positive bias is created by the models for the PDAs and TODs in the plan. However, literature strongly suggest that this bias is wrong and as a result "if you build PDAs and TODs, they won't come."

Page 3.6-661. ABAG/MTC did not respond to my complaint that **Model One ignores walking scale access and movements.** This is a well-known and problematic limitation in current travel models, and by extension, in integrated land use and transportation models.

C171-3. Unlike the other alternatives, Alternative 4 is not bound to the 9-county area, so the population interactions with the surrounding counties were modeled using, at best, rough approximations. Unlike the ABAG/MTC response calling it a "theoretical criticism", this is a bias that was not explained in the response.

C171-4. The fact remains that Plan Bay Area has made unrealistic long term assumptions to arrive at definite and rigid conclusions.

C171-5. My criticism addresses the fact the UrbanSim development has occurred over a period of about 10 years. It is a mathematical "baby" that is not robust enough to make 30-year predictions with it.[2] ABAG/MTC responds that the plan will be updated every four years. But that's only a trick of the planning process. Once major projects are committed based on flawed analysis such as the Plan Bay Area EIR, there is very little turning back.

C171-6. My original concern was as follows. EIR statement: "**...there was not sufficient time or resources to thoroughly address all data problems encountered, including some extreme values, missing values, and inconsistencies within and among data sources.**" Indeed this

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[1] Yingge Xiong, Jon D. Fricker, Kevin T. McNamara, Joseph W. Longley. Socioeconomic forecasting. Joint Transportation Research Program. Purdue University, 2012.

[2] In contrast, TRANSYT, a large software tool (and many derivatives) used by traffic engineers to optimize the green times of traffic signal networks in cities dates back to the 1950s and it still evolves. Minute-by-minute traffic signal system operations are much easier to handle than metropolitan area simulations of millions of people 30 years into the future. Traffic signal models and city signal optimization still have limitations and real world failures.

appears to be a rushed application on a very large area. The amount of built-in errors is likely substantial.

ABAG/MTC responds that this is a "theoretical criticism" although their UrbanSim consultant clearly stated in the EIR that there was not sufficient time or resources to thoroughly address all data problems encountered. This issue of data quality in planning that ABAG/MTC brush off conforms to ***Surveyors can't do anything with inaccurate data, and planners can do anything with inaccurate data*** by Kenneth J. Dueker, Professor of Urban Studies and Planning, Portland State University (http://urisa.org/node/393).

C171-7. ABAG/MTC responded that I "did not suggest any actual foreseeable future behavioral patterns that ABAG/MTC may have ignored in the Draft EIR." This is not the case. My list on page 3.6-762 shows several ignored and momentous changes:

- **persistent high unemployment**
- **lower birth rate**
- **increasingly expensive food and energy**
- **higher state and federal taxes, and poised to grow more to cover debts and liabilities**
- **higher health care cost, and poised to grow due to baby boomers and Obamacare**
- **forced spending in infrastructure which is now too far from a state of good repair**

Most of the trends listed above were absent in 1990 and 2000. So, this time around, truly "the future isn't what it used to be" (Yogi Berra.)

Overall, my concerns on critical weaknesses in the UrbanSim and Model One models themselves, their validation, limitations in the data used, and the uncertainty of the forecasted results were not addressed.

PART 2: EIRS Analysis and Results. Comments C172-1 to C172-25.

The comments below correspond to the ABAG/MTC responses to my concerns relating to the Draft EIR for Plan Bay Area (letter dated May 13, 2013.) Some of the ABAG/MTC responses were useful and had some justifiable basis but most of the responses were wordsmithing exercises rather than substantially qualified answers, as explained below.

C172-1. The fact is that this is a 30 year plan and it fails to consider a thorough automated freeway/electric vehicle scenario that the supermajority of area residents are likely to adapt to as driverless cars and EV technology rapidly evolve. Given the choice, almost all people will choose advanced technology (e.g., Google Prius) rather than 19th century technology (e.g., BART.)

For a Californian community that thrives on high tech (Berkeley, Stanford, Silicon Valley, and so forth) the omission of a high-technology alternative is suspicious (and perhaps shameful).

C172-3. Not true! The Plan may "fully fund" transit, the 10% mode, by robbing the remaining 90% modes. This will have predictably ruinous results.

C172-4. If this response is not spin, then I do not know how to define spin: "the full 2010 Decennial Census is used to inform both the 2010 population estimates and the 2040 population projections" Why does this sentence say **inform** and does not say **used**? The question is this: Were 2010 US Census data used directly as the basis for projections, yes or no? The answer appears to be **no** which constitutes a major omission as I originally indicated.

C172-5. "...although MTC does not agree with the calculation assumptions used by the commenter to derive the specific ratios ..." My calculations are simple, defensible and suitable approximations. You did not provide any quantitative proof to counter my argument that the ratio of transit to other models is about 1 to 20 (or 5%), yet based on this Plan, transit receives 68% of the transportation funding.

C172-6. Your response confirms that **rail trips take a free pass by your modeling process.** Rail trips are modeled as delay-free despite the fact that they require long walk times and inconvenient transfers, as well as occasional crowding-related delays and typical low speed service. The modeling assumptions in the Plan have a bias against bus transit and other highway modes.

C172-7. The ABAG/MTC directed me to response C153-9 to Randal O'Toole which includes this:

"... **the share of Bay Area residents commuting by transit has remained steady over the past two decades despite significant transit investments** such as BART extensions to Millbrae, Pittsburg, and Dublin/Pleasanton. ..."

This is a significant admission and confirms that Plan Bay Area high likelihood for failure. The rest of the discussion is typical transit planner wishful thinking and future based exaggerations that typically nobody is held accountable for.

Despite the Plan's land use hyperbola, TRB Special Report 298 clearly states that a 100% increase in density yields only a 5% reduction in vehicles miles or travel (VMT) and only in one case a 12% reduction in VMT was observed. Additional discussion included in my response to Master Response D.2 and Appendix A.

C172-9. See C172-16.

C172-10. The ABAG/MTC response reads as follows: "...intersection-level delays are approximated by adjusting effective lane capacities by place type. For example, the narrow urban streets of San Francisco (with short block lengths) have a lower effective lane capacity than the wider suburban streets (with longer block lengths) of southern Alameda County. The lower effective link capacity serves as a proxy for the delays used by the greater number of congested intersections in urban locations ..." My concern has been confirmed:

This is a static approximation which may work for a few years, but as volume approaches capacity over time delays grow exponentially and the model does not account for this. A close equivalent of this traffic modeling simplification is a Flat Earth simplification.

C172-11. This is an enlightening response and I agree that 80% "capacity" is appropriate for buses. Why was 80% used for trains where standing is less onerous? My comment referred to crush loads which typically refer to rail transit. Why was rail modeled with an 80% capacity factor? To yield more rail capital expenditures for MTC!

C172-12. See C172-16.

C172-13. ABAG/MTC hope to provide relief by deploying more transit while it clearly acknowledges that despite heavy investment over the past 20 years transit share is stuck at 10%. To wit: Response **C153-9**: "**... the share of Bay Area residents commuting by transit has remained steady over the past two decades despite significant transit investments** such as BART extensions to Millbrae, Pittsburg, and Dublin/Pleasanton. ..." Therefore my conclusion stands as originally stated: ... congestion on the area's roadways will worsen by 20%. Roads do most of the transportation work in the Bay Area but receive only 38% of the funding, so they will operate poorly, and worsen over time.

C172-14. A simple summary makes it clear that Plan Bay Area assertions are not credible:

(a) Past two decade performance have transit share stuck; see ABAG/MTC response **C153-9**
(b) EIR: transit trips to work increased from 294,000 in 1990 to 333,000 in 2010, a less than 7% increase per decade
(c) LA's projected growth of transit usage over a decade is 8.8%.[3]

But Plan Bay Area expectation for the next 28 years is for 31% growth per decade. This estimate which is fundamental to the success of the Plan is simply **not credible.**

C172-15. These are pro-transit arguments that hold water for the walking mode but not for drive alone and carpool which have longer trips than most rail and bus trips. Many bike and bus trips have comparable average length.

It is the job of the EIR preparer to provide credible statistics by key origin-destination pairs instead of replying to reviewers that comparisons not based on OxD are "inappropriate." The EIR has them published in Tables 2.1-14 and 15 and average comparisons are quite appropriate although very unflattering to ABAG/MTC mode preferences.

C172-16. The ABAG/MTC response starts as follows: "All of the alternatives, with the possible exception of the No Project alternative that only pursues committed transportation projects, address issues of mobility and traffic congestion." **This is not true.**

ABAG/MTC response **C172-1** says: "Per CEQA, an EIR is **unconcerned with cost effectiveness or speed,** it is intended to publicly disclose and propose mitigations for potential environmental impacts and to

[3] http://www.metro.net/news/ridership-statistics/

evaluated a reasonable range of alternatives, for consideration by decision-makers prior to plan adoption." **If neither cost-effectiveness nor speed is a concern of the Plan, then how does the Plan effectively address mobility and traffic congestion?**

Then ABAG/MTC provide this: "Pursuing a regional highway capacity-increasing approach would likely have additional environmental impacts and would not address the Plan's primary goal of reducing per-capita greenhouse gas emissions under Senate Bill 375." Clearly SB 375 is used as an excuse to pursue the wrong solution. However, ABAG/MTC were not able to dispute the EPA-based expectation in my original critique that **strict future targets for emissions will be easily attained in 2040 with technological innovation and fleet renewal alone.**

C172-17. The Plan remains deficient because it provides no specific data on rail transit noise along the various rail transit corridors for both riders and surrounding communities including residential areas, churches, hospitals, etc.

C172-18. Wrong! Do examine the noise graph (Figure 2.6-6) closer: The vertical axes are in dB but the textual explanations of the axes are wrong. For example, the right vertical axis should read Category 2, not Category 3.

C172-19. The response refers to existing highways some of which may have low height noise barriers. However, the EIR targets the next 30 years. If noise is to be mitigated why would it assume anything lower than an effective 10 ft. high sound barrier?

If the analysis is conservative as stated, why did it totally omit rail noise analysis?

C172-20. ABAG/MTC response: "As the commenter points out, the differences between alternatives are extremely small, and the commenter is correct in noting that when doing 28-year planning and impact analysis, the differences between most alternatives in many cases is so small as to be within a likely margin of error of the tools used for the analysis." **If ABAG/MTC had proper respect for science and statistics then it would clearly state that an alternative cannot be chosen based on the model estimates on hand.**

C172-21. All along the EIR extols its effort to be land-use based and integrate land-use tightly with transportation. So when Alt. 4 is identified as the one offering the lowest land-use impacts (by far), ABAG/MTC respond that "The commenter is correct that Alternative 4 performs more poorly in impacts associated with transportation impacts, and performs relatively well compared to the other alternatives regarding land use impacts." Alt. 4 has reasonably quantifiable land use advantages whereas its transportation impacts are based on pie-in-the-sky 31% decadal transit growth and similar unlikely goals.

C172-24. The ABAG/MTC response does not address my concern that estimates for Alternative 4 are biased against it.

C172-25. The ABAG/MTC response suggests that EIR process has difficulties with modeling some of the trends I suggested although many of them have fairly predictable trends and ranges. Instead it is comfortable projecting a transit growth of 31% per decade whereas for the large two decades there has been 0% growth in transit share. Overall, it is worth repeating that this EIR appears to be ignorant of momentous negative underlying trends such as persistent high unemployment, lower birth rate, increasingly expensive food and energy, higher state and federal taxes (and poised to grow more to cover debts and liabilities,) higher health care cost, and poised to grow due to baby boomers and Obamacare, and forced spending in infrastructure which is now far from a state of good repair, All of these trends are present, large and amenable to socioeconomic modeling.

Lastly, I have major concerns with the ABAG/MTC master response D.2, as follows.

Master Response D.2: The Connection between Higher-Density Housing near Transit and Reduced Greenhouse Gas Emissions

The EIR states this: "As discussed in detail below, there is voluminous peer-reviewed, credible research to support the GHG reduction benefits of transit oriented development."

This sentence is largely made up. A good summary of this topic is given in TRB Special Report 298 that Plan Bay Area response also cites. Its core substantiated conclusion is that **if urban density is doubled (+100%) then VMT will drop by 5% and CO_2 may drop by 1%.**

The report was concluded at desperate times (2009) and is contains political and issue-du-jour biases. To wit, here is the only policy recommendation made and the sentence immediately beneath it:

POLICY RECOMMENDATION: Policies that support more compact, mixed use development and reinforce its ability to reduce VMT, energy use, and CO_2 emissions should be encouraged.

The committee recognizes that it does not have as much verifiable scientific evidence to support this recommendation as it would like... But nevertheless the authors of SR 298 proceeded unabated to encourage MPOs to pursue densification although there is evidence that this is a protracted, unrealistic and cost ineffective endeavor. This is a depiction of "smart growth" and similar political philosophy masquerading as science.

This was the one and only POLICY recommendation. There were two more RESEARCH recommendations because obviously there are gaps in this area. These large and clear gaps are present today, but are filled by wordsmithing in the ABAG/ MTC Plan Bay Area EIR responses and justifications. More details about TRB Special Report 298 in Appendix A.

Overall almost all ABAG/ MTC responses to my review items submitted in May 2013 did not address the serious flaws identified in the Draft EIR.

Sincerely,

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APPENDIX A: TRB SPECIAL REPORT 298

- **TRB SR 298 major finding**: The literature suggests that doubling residential density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures.

Let's see how this finding was justified:

- TRB SR 298: Studies aimed at isolating the effect of residential density while controlling for socio-demographic and other land use variables consistently find that doubling density is associated with about 5 percent less VMT on average; one rigorous California study finds that VMT is lower by 12 percent.

All but one of the literatures indicates that density has to be increased by 100% in order for VMT to drop by 5%. Isn't it obvious that this is a poor rate of effectiveness (payoff of the effort involved to double the density)?

- TRB SR 298: The authors of this analysis interpret its findings by using the following thought experiment. If households in Atlanta, one of the least dense metropolitan areas, were located in an area with the residential population density, concentrated employment, extensive public transit system, and other land use characteristics of the Boston metropolitan area, VMT per household could be lowered by as much as 25 percent.

Well it is obvious that some of our nation's top academics like to play silly games. Of course, if Honolulu had been developed like Manhattan, now 95% of the island of Oahu would be green with taro patches and endless sugar and pineapple fields. What's the reality of this to Honolulu in 2013? None. What's the likelihood that Honolulu will be built like Manhattan between 2013 and 2113? None. Similar parallels can be made for the Bay Area.

- **TRB SR 298 major finding:** More compact, mixed-use development can produce reductions in energy consumption and CO_2 emissions both directly and indirectly.

Wait! The qualification below the finding takes its strength away.

- To the extent that more compact development reduces VMT, it will directly reduce fuel use and CO_2 emissions. The VMT savings will be slow to develop, however, if only because the existing building stock is highly durable; therefore, **opportunities to build more compactly are limited largely to new housing as it is built to accommodate a growing population and to replace the small percentage of existing units that are scrapped each year**. Over time, moreover, if the fuel efficiency of the passenger vehicle fleet improves through either regulation (such as the new Corporate Average Fuel

Economy standards) or sustained higher fuel prices that encourage consumers to purchase more **energy-efficient vehicles, the savings in fuel use and CO_2 emissions from developing more compactly will be reduced**, all else being equal.

CAFÉ is producing dramatic reductions in fuel efficiency. The simple introduction of hybrid and electric vehicles has already produced an 8.2% reduction in gasoline consumption nationally between the highest years (2005) and the last year with full data (2012)[4]. Clearly there is no need for any, let alone draconian land use measures such as the Plan Bay Area PDAs, and other TOD subsidies.

Furthermore, let's revisit the opening sentence "To the extent that more compact development reduces VMT, it will directly reduce fuel use and CO_2 emissions." Not only this is double counting because it is solely based on the (small) VMT reduction but the sentence is also largely wrong. Doubling the density will likely mean exponential growth in traffic congestion. A 100% increase in density produces a 5% VMT drop: A sample trip of 10 miles reduces to 9.5 miles (5% shorter) but the trip fuel efficiency may worsen from 25 to 22 mpg (12% worse). So every road trip will actually need more energy and will produce more pollution rendering the region worse off.

- TRB SR 298: A more moderate scenario, which assumes that 25 percent of new and replacement housing units will be built in more compact developments and that residents of those developments will drive 12 percent less, would result in reductions in fuel use and CO_2 emissions of about 1 percent relative to base case conditions in 2030, growing to between 1.3 and 1.7 percent less than the base case in 2050.

This report was written in 2009. It says that with extraordinary densification CO_2 might reduce by 1.7% after 40 years. Modest hybrid car adoption can do the same in a few years time. **It is quite clear that urban densification is the wrong approach. It is being promoted as a "solution" by urban planning agencies and their paid consultants largely because it is a prerequisite for making them needed to work on transit and TODs, i.e., promote their own job security and empire building for transit agencies.**

[4] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=C100000001&f=M